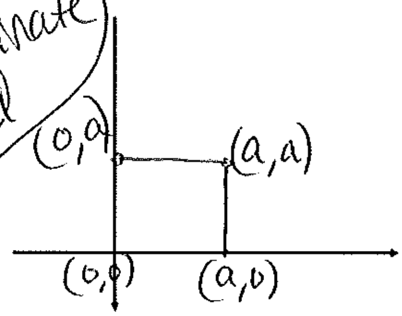
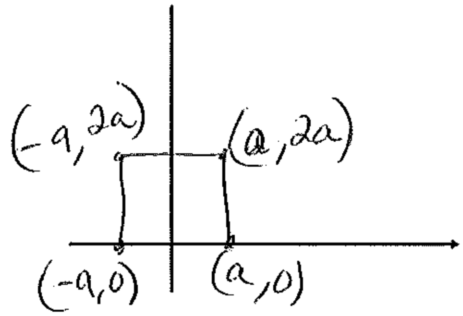
Geometry 21 **Coordinate Proofs – extra practice with variables** Name Sample Answers

Draw the given figure on each pair of axes and assign appropriate variable coordinates for each vertex. Then draw THE SAME shape again on the 2nd pair of axes, in a different position, using appropriate coordinates.

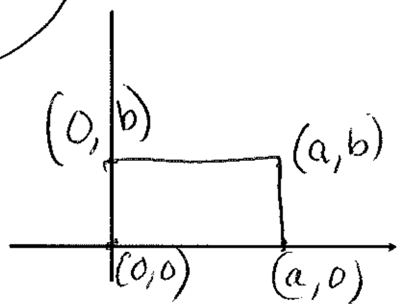
*Remember to DOUBLE every coordinate if you know you need to find midpoints

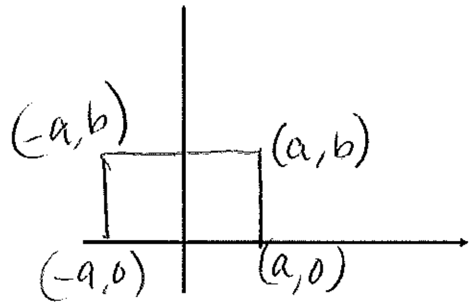
1) SQUARE



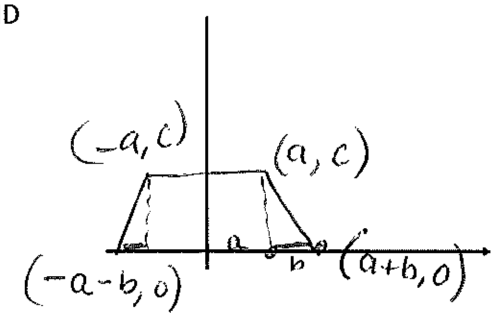


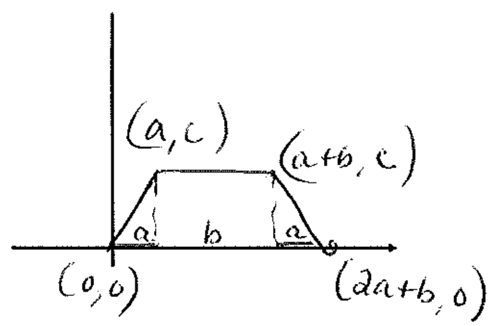
2) RECTANGLE



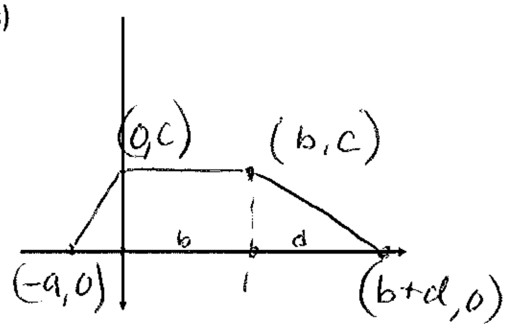


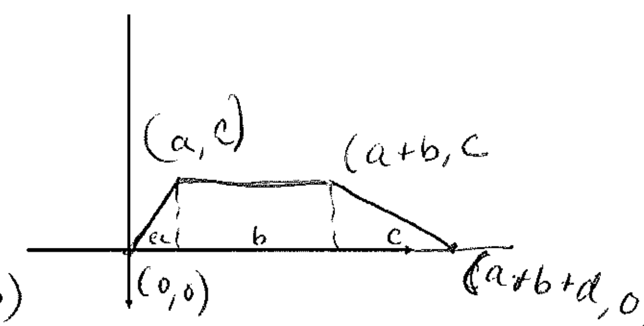
3) ISOSCELES TRAPEZOID



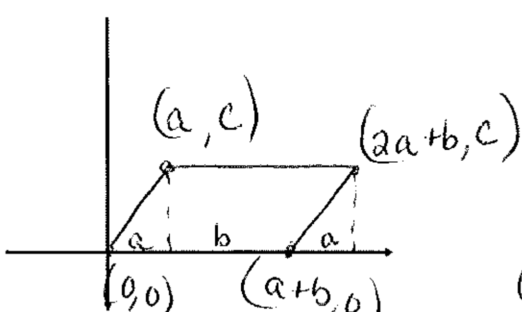


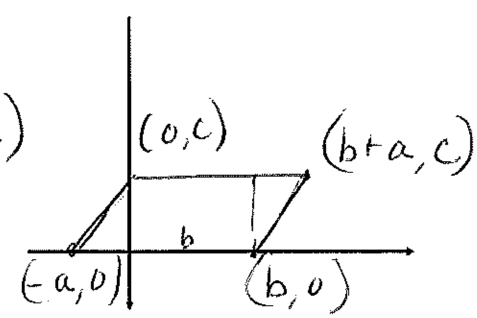
4) TRAPEZOID (not isos)



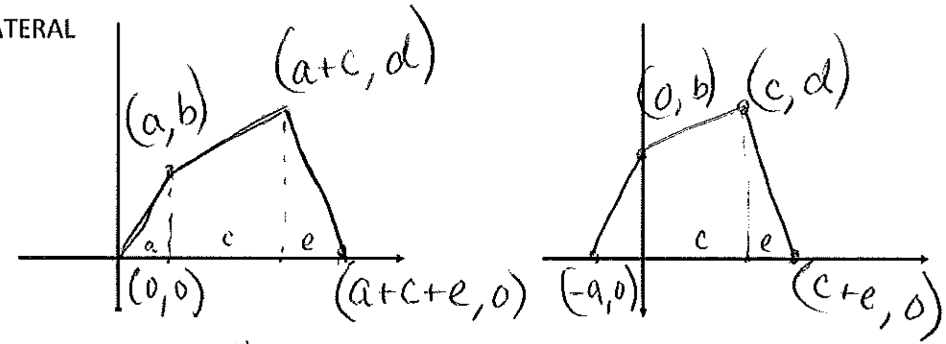


5) PARALLELOGRAM

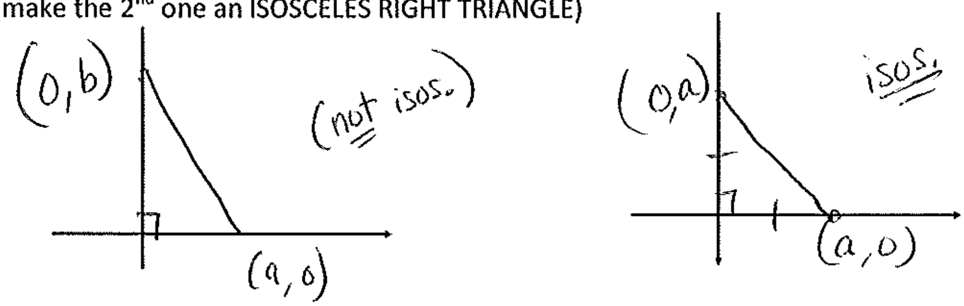




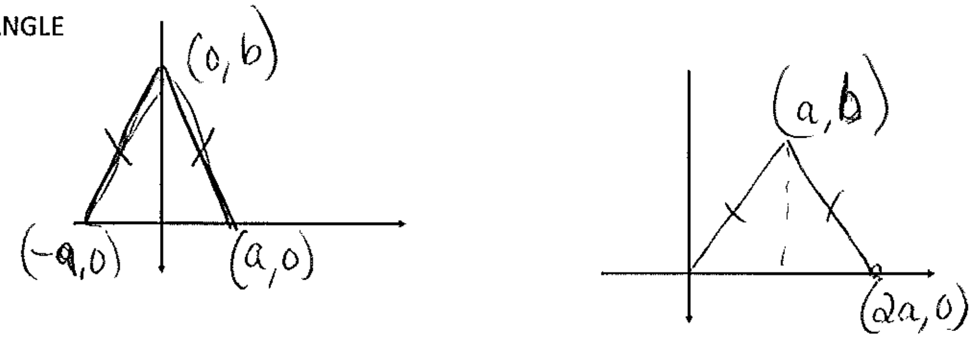
6) QUADRILATERAL



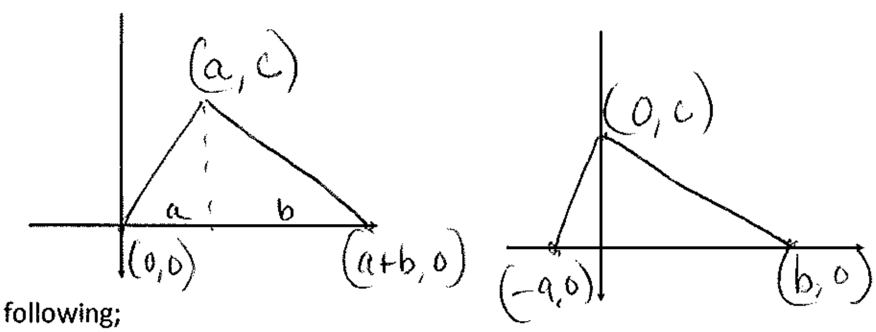
7) RIGHT TRIANGLE (make the 2nd one an ISOSCELES RIGHT TRIANGLE)



8) ISOSCELES TRIANGLE

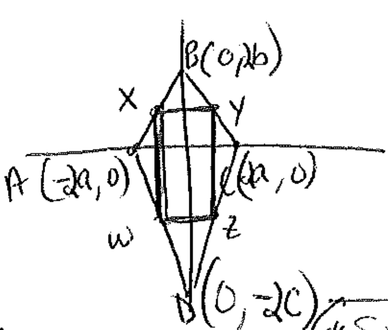


9) TRIANGLE (not isos, not right, etc.)



Write a coordinate proof of the following;

10) The quadrilateral formed by connecting the midpoints of a KITE is a rectangle. (make the x and y axes contain the diagonals of your kite



Midpts of $\overline{AB} \Rightarrow X\left(\frac{-2a}{2}, \frac{2b}{2}\right)$

$X(-a, b)$

$\overline{BC} \Rightarrow Y(a, b)$

$\overline{DC} \Rightarrow Z(a, -c)$

$\overline{AD} \Rightarrow W(-a, -c)$

Diag. bisect each other

midpts $\overline{XZ} = \left(\frac{-a+a}{2}, \frac{b-c}{2}\right)$

$\left(0, \frac{b-c}{2}\right)$

$\overline{YW} = \left(\frac{a-a}{2}, \frac{b-c}{2}\right)$ same

$\left(0, \frac{b-c}{2}\right)$

Diag. ≅

$XZ = \sqrt{\cancel{(a-a)^2}+(b-c)^2}$

$b-c$

$YW = \sqrt{(a-a)^2+(b-c)^2}$

$b-c$

congruent diagonals

* Since XYZW is a ∥gm w/ ≅ diagonals, then the quadr. formed by connecting midpts. of a KITE is a rectangle.

~~11)~~